

## **AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

32 (currently amended). A process for the detection of a specific nucleic acid sequence comprising:

- (a) forming a first composition comprising
  - (i) a sample,
  - (ii) a first oligonucleotide primer which comprises a promoter sequence,
  - (iii) a second oligonucleotide primer,
  - (iv) a DNA-directed RNA polymerase,
  - (v) an RNA-directed DNA polymerase,
  - (vi) a DNA-directed DNA polymerase, and
  - (vii) a ribonuclease that hydrolyzes RNA of an RNA-DNA hybrid without hydrolyzing single or double-stranded RNA or DNA;
- (b) incubating the ~~reaction mixture~~ first composition for a sufficient time to amplify said specific nucleic acid sequence to form ~~an amplified nucleic acid sequence~~ a mixture comprising an amplified nucleic acid sequence;
- (c) forming a second ~~mixture~~ composition by adding to a sample of said ~~amplified nucleic acid sequence~~ mixture the following reagents
  - (i) at least one detection probe sequence which specifically hybridizes to said amplified nucleic acid sequence, said

detection probe sequence being labeled with an  
electrochemiluminescent species,

- (ii) at least one capture probe sequence which specifically  
hybridizes to said amplified nucleic acid sequence, said capture  
probe sequence being labeled with a binding species, and
- (iii) a solid phase coated with a binding partner of said binding  
species;

- (d) incubating said second ~~mixture~~ composition for a time sufficient to  
allow hybridization of said probes to said amplified nucleic- acid  
sequence and to allow binding of said binding species to said binding  
partner so as to form a solid phase-bound hybridization complex; and
- (e) detecting said specific nucleic acid sequence by measuring  
electrochemiluminescence from said solid phase-bound hybridization  
complex by using said electrochemiluminescent species.

33 (previously presented). The process of claim 32, wherein said solid phase is a  
magnetic bead.

34 (currently amended). The process of claim 32, wherein the ~~binding-~~  
~~species/binding partner pair~~ binding species and the binding partner are ~~selected from~~  
~~the group consisting of biotin/avidin, biotin/streptavidin, and digoxigenin/anti-~~  
~~digoxigenin~~ biotin and avidin, or biotin and streptavidin, or digoxigenin  
and anti-digoxigenin.

35 (previously presented). The process of claim 32, wherein the binding species  
is biotin and the solid phase is a streptavidin-coated magnetic bead.

36 (currently amended). The process of claim 32, wherein said amplified nucleic acid sequence is the anti-sense copy of the specific nucleic acid sequence and wherein said amplification of said specific nucleic acid sequence is carried out under conditions which permit

- (i) said second oligonucleotide primer to hybridize to an RNA template which comprises the specific nucleic acid sequence or an anti-sense copy of the specific nucleic acid sequence,
- (ii) said RNA-directed DNA polymerase to utilize said RNA template to synthesize a DNA template by extension of said second oligonucleotide primer and thereby form an RNA-DNA hybrid intermediate,
- (iii) said ribonuclease to hydrolyze RNA contained in said RNA-DNA hybrid intermediate,
- (iv) said first oligonucleotide primer to hybridize to said DNA template,
- (v) said DNA-directed DNA polymerase to utilize said DNA template to synthesize a double-stranded DNA product by extension of said first ~~oligonucleotide~~ oligonucleotide primer, said ~~double-stranded~~ double-stranded DNA product comprising said promoter, and
- (vi) said DNA-directed RNA polymerase to recognize said promoter and transcribe said double-stranded DNA product so as to form more copies of said RNA first template.

37 (previously presented). The process of claim 32, wherein said electrochemiluminescent species comprises ruthenium-tris-bipyridine.

38-43 (cancelled).